

USSR

DUKHANINA, N. N., et al, V sb. Materialy Nauchn. konferentsii, posvyashch. 50-letiyu In-ta med. parazitol. i tropich. med., 1970 (Proceedings of the Scientific Conference Commemorating the 50th Anniversary of the Institute of Medical Parasitology and Tropical Medicine, 1970 -- collection of works), Moscow, 1970, pp 14-16 (from RZh-36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No 1.36.129 by V. Maslovskaya)

of people from abroad; this is the only evidence that the reappearance of the disease is related to malaria brought in from abroad.

USSR

BANDMAN, O. L.

"Synthesis of Automata in a Cryotronic Computer Medium"

Avtomatika i Vychisl. Tekhn. [Automation and Computer Technology], 1972, No 5, pp 20-30 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V618, by the author).

Translation: Several methods of synthesis of logic functions and automata in a cryotron computer medium are summarized. Through algorithms for the transition from the abstract method of definition of an automaton to the optimal program for tuning of the computer medium are presented. Estimates are produced of the complexity of realization of the automata in the cryotronic computer medium.

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BANDMAN, O. L.

"Optimal Synthesis of Asynchronous Automata in a Cryotron Computing Medium"

Vychisl. Sistemy [Computer Systems -- Collection of Works], Novosibirsk,
No 41, 1971, pp 52-76, (Translated from Referativnyy Zhurnal, Kibernetika,
No 3, 1972, Abstract No 3 V321).

NO ABSTRACT.

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1/2 019 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--LOCAL LEVELS IN HEXAGONAL SELENIUM -U-
AUTHOR--(04)-KOLOMYETS, B.T., BANDROVSKAYA, I.K., TSYGELNAYA, N.N.,
KHODOSEVICH, P.K.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 387-8
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, PHYSICS
TOPIC TAGS--SELENIUM, ACTIVATION ENERGY, FORBIDDEN BAND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1995/0937 STEP NO--UR/0449/70/004/002/0387/0388
CIRC ACCESSION NO--AP0116446
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116446

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTL. DATA INDICATE, CONTRARY TO ASSUMPTION, THAT THERE ARE NOT 2 OR 3 GROUPS OF DISCRETE LOCAL LEVELS IN THE FORBIDDEN BAND OF HEXAGONAL SE; THE TEMP. DEPENDENCE (IT EQUALS 83-300DEGREESK) OF THE COND. (DETD. BY A CYCLING METHOD) INDICATES THAT THE FORBIDDEN BAND OF HEXAGONAL SE HAS A MORE COMPLICATED STRUCTURE WITH A CONTINUOUS SPECTRUM OF THE LOCAL LEVEL DISTRIBUTION. THERE CAN EXIST INTERVALS WITH AN ELEVATED D. OF LEVELS IN THIS SPECTRUM; SUCH INTERVALS APPEAR IN THE MEASUREMENT OF THE THERMOSTIMULATED COND. THE ACTIVATION ENERGY, 0.25 EV, CORRESPONDS TO THE DARK COND. THE TEMP. DEPENDENCE MEASURED AFTER A CYCLE OF ILLUMINATION AT 83DEGREESK, QUICK HEATING, AND SLOW COOLING, GAVE ACTIVATION ENERGIES OF 0.075, 0.090, AND 0.13 EV IN 3 CONSECUTIVE CYCLES. FACILITY: L'VOV. TORG.-EKON. INST., LVOV, USSR.

UNCLASSIFIED

USSR

UDC: 621.396.677.7:536.231.16

BANDUKOV, V. P. and FOKRAS, A. M.

"Highly Efficient Radiation System for a Two-Reflector Antenna"

Tr. NII radio (Transactions of the Scientific Research Institute of Radio) 1970, No. 2, pp 87-95 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3B58)

Translation: The peculiarities of designing reflector profiles for a specified directional diagram of the radiator and for uniform field distribution in the fundamental reflector aperture are considered.

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USSR

UDC: 621.391:621.376.4

BANDURA, N. V.

"Analyzing Characteristics of FM Signal Distortion in Narrow-Band Channels"

Tr. NII radio (Transactions of the Scientific Research Institute of Radio) 1970, No. 1, pp 95-103 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3A102)

Translation: A quantitative estimate is given of the time distortion of FM signals as a function of the filter bandwidth and the form of its amplitude-frequency characteristic. Resume

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BANDURA, V. N.

"Markov Processes with Switchings"

Teoriya sluchayn. protsessov [The Theory of Random Processes], No 1, Kiev, Nauk. Dumka Press, 1972, pp 9-18 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V49 by the author)

Translation: A definition is given for markov processes with switchings, which are a generalization of markov processes which are homogeneous according to one component. A limit theorem is proven on the convergence of a certain sequence of markov chains to a process with diffusion type switchings.

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UDC: 519.214,519.217

BANDURA, V. N.

"Limiting Theorem for Nonhomogeneous Additive Functionals of a Markov Chain"

Matem. fizika. Resp. mezhved. sb. (Mathematical Physics. Republic Inter-departmental Collection), 1970, vyp. 7, pp 25-27 (from RZh-Kibernetika, No 1, Jan 71, Abstract No 1V35)

Translation: A theorem is proved on the convergence of a sequence of additive nonhomogeneous functionals of an ergodic Markov chain with a finite number of states to a Gaussian nonhomogeneous process with independent increments. Author's abstract.

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UDC 519.217

BANDURA, V. N.

"Limit Theorem for Diffusion Processes with Clearing to 0"

Teoriya Veroyatnostey i Mat. Statist. Mezhd. Nauch. Sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], No 2, 1970, pp 22-28 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V55 by D. Sil'vestrov).

Translation: Suppose $\zeta_{n0} = 0$, $\zeta_{n1}, \dots, \zeta_{nn}$, $n = 1, 2, \dots$, is a sequence of series of random quantities such that each series is formed according to the following rule:

$$\zeta_{nk+1} = (\zeta_{nk} + \xi_{nk+1}) \eta_{nk+1}, \quad k = \overline{0, n-1},$$

here ξ_{nk} and η_{nk} are random quantities such that

$$\begin{aligned} P\{\xi_{nk+1} < y / \zeta_{nk} = x, \xi_{nr}, \eta_{nr}, r = \overline{1, k}\} &= \\ &= P\{\xi_{nk+1} < y / \zeta_{nk} = x\} = F_n(y/x), \\ P\{\eta_{nk+1} = 1 / \zeta_{nk} = x, \xi_{nr}, \eta_{nr}, r = \overline{1, k}\} &= \\ &= P\{\eta_{nk+1} = 1 / \zeta_{nk} = x\} = 1 - P\{\eta_{nk+1} = 0 / \zeta_{nk} = x\} = \\ &= p_n(x), \quad k = \overline{1, n-1}. \end{aligned}$$

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UDC 519.217

BANDURA, V. N., Teoriya Veroyatnostey i Mat. Statist. Mezhd. Nauch. Sb. No 2, 1970, pp 22-28.

Suppose $\zeta_n(t)$, $t \in [0,1]$ are random broken lines with peaks at points $(k/n, z_{nk})$, $k = 0, 1, \dots, n$. This work studies conditions sufficient for convergence of the finite-dimensional distributions of random processes $\zeta_n(t)$, $t \in [0,1]$ as $n \rightarrow \infty$ to the corresponding finite-dimensional distributions of diffusion processes with clearing to 0. Under the same conditions, weak convergence of the distribution of the functionals in $D[0,1]$ (the space of functions in $[0,1]$ without second order discontinuities), continuous in Skorokhod topology.

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USSR

UDC: 536.421.4;541.123.7

BANDURKINA, G. V., MIRONOVA, N. A., and POSPELOVA, R. V.

"Obtaining Monocrystalline Epitaxial $\text{Co}_x\text{Mg}_{1-x}\text{O}$ Solid Solution Films"

Riga, Izvestiya Akademii nauk Latvviyskoy SSR -- Seriya fizicheskikh i tekhnicheskikh nauk, No 3, 1972, pp 32-33

Abstract: A description is given of a method for obtaining monocrystalline films of $\text{Co}_x\text{Mg}_{1-x}\text{O}$ by using chemical transport reactions in an HCl atmosphere in a small gap. Discs of 15 mm diameter and 1-1.5 mm high, made by ceramic techniques, were used as sources of $\text{Co}_x\text{Mg}_{1-x}\text{O}$. The original materials used were magnesium oxide of the analysis-pure type and cobalt nitrate of the "very pure" type. The magnesium oxide in powder form was impregnated with a solution of the cobalt nitrate in the proper concentration, was dried by evaporation and heated to 500-600° C for six hours to drive off the nitrogen oxide, and was then further heated at 1300° C until the formation of single-phase polycrystalline solid solutions of $\text{Co}_x\text{Mg}_{1-x}\text{O}$. The substrates were monocrystalline plates of MgO 0.5-1.0 mm thick. Members of the Institute of Physics, Academy of Sciences of the Latvian SSR, the authors express their gratitude to I. E. Tsirkunova and to Ya. M. Ksendzov for their assistance.

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Acc. Nr.

AP0055641

Abstracting Service:
CHEMICAL ABST.

6620

Ref. Code

UR 0460

112192g Membrane made from ultrathin polymer films.
Papkov, S. P.; Iovleva, M. M.; Banduryan, S. I. (Vses.
Nauch.-Issled. Inst. Iskusstv. Volokna, Mytishchi, USSR). Vysokomol. Soedin., Ser. B 1970, 12(2), 153-5 (Russ). Ultrafine films
prepd. from a 2% soln. of secondary cellulose acetate (I) (mol. wt. 87,000) in AcOH or from viscose (II) were examd. under an electron microscope. A photomicrograph of I films revealed 2 layers: a primary membrane, which was very porous and fine, and a reticular layer contg. large globules. The primary membrane of a II film (obtained on the surface of a 1-3% H₂SO₄ soln. or H₂O) was smooth whereas the 2nd layer had a variable morphology depending on the compn., rheol. properties, and shrinkage during syneresis. The formation of the primary membrane depended on the reaction of the polymer soln. with the pptg. agent. CKJR

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USSR

UDC 536.5.539.893

NIKOLAYENKO, V. A., BANEYEVA, M. I.

"Measurement of Temperature in High Pressure Chambers Using Irradiated Diamond"

Sintetich. Almazy. Nauch.-Proyizn. Sb. [Synthetic Diamonds, Scientific and Production Collection], 1972, No 1 (19), pp 9-11, (Translated from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, 1972, No 5, Abstract No 5.32.832, by the author's).

Translation: Results are presented from experiments on annealing of irradiated diamond and graphite at 100-1,000°C and pressures up to 100 kbar. It is shown that annealing of defects responsible for expansion of crystal-line lattices of these materials is accelerated as pressure increases. This effect is explained by a decrease in activation energy of annealing of defects due to the elastic energy stored in the lattice in compression. The method can be used to measure temperatures in high pressure chambers. Indicators of a mixture of irradiated diamond and graphite powders can be used for simultaneous determination of temperature and pressure.

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UDC: 518.519.3

BANICHUK, N. V., PETROV, V. M., and CHERNOUS'KO, F. L.

"Algorithm and Convergence Problems of the Method of Local Variations for Partial Derivative Situations"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, No 1, 1973, pp 47-58

Abstract: The method of local variations for the numerical solution of variational problems was originally proposed in an article published by the last of the above-named authors in the same journal (5, No 4, 1965, pp 749-754). The present paper offers a number of new results in the development of this method for solving variational problems involving partial derivatives. An algorithm of the method is given for the minimization problem of a non-additive functional of arbitrarily general form together with some generalizations and modifications of the method. A standard program for the method is presented in the form of a procedure using the ALGOL 60 language for variational problems with a nonadditive functional depending on functions of two variables. The final section of the paper is devoted to convergence questions and error evaluations.

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Adsorption

USSR

UDC 541.183

BANINA, V. A., VOZMILOVA, L. N., MAMONTSOV, A. P., and FOMIN, G. G.

"Adsorption of Organic Solvents on the Surface of Gallium Arsenide"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 45, No 8, Aug 71, p 2098

Translation: The authors investigated the adsorption of acetone, benzene, carbon tetrachloride, methyl alcohol and ethyl alcohol on the surface of gallium arsenide. Organic solvents tagged with carbon-14 were used in the work. The counting apparatus did not permit counting the number of adsorbed molecules and therefore the ratio $N:S^m$ was calculated, which is proportional to the number of adsorbed molecules. Here N is the sample count (cpm) after treatment with the solvent and drying for two hours at room temperature and S^m is the calculated specific radioactivity of one gram molecule of solvent.

The results show that all investigated solvents are adsorbed on the surface of gallium arsenide. The degree of adsorption decreases in the order acetone > benzene > ethanol > methanol > carbon tetrachloride, in relative units: 37:15:7:6:1.

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BANINA, V. A., et al., Zhurnal Fizicheskoy Khimii, Vol 45, No 8, Aug 71, p 2098

A study of desorption of organic solvents from the surface of gallium arsenide on heating showed that all investigated solvents with the exception of carbon tetrachloride are fairly strongly held to the surface of gallium arsenide and are removed only with difficulty on heating. The hypothesis is advanced that bonding of the organic molecule to the surface of the semiconductor is due to donor-acceptor interaction.

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BANIS, I.

"The Rate of Convergence to a Multidimensional Local Theorem in the Case of a Stable Limiting Law"

Lit. mat. sb. [Lithuanian Mathematics Collections], 1973, 13, No 1, pp 17-22 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V21 by the author)

Translation: (ξ_i) , $i=1, 2, \dots$, be a sequence of independent, K -dimensional, identically distributed random quantities, belong to the area of normal attraction of a stable law $G(x)$ with characteristics indicator α ($0 < \alpha < 2$) and density $G(x)$. It is assumed that where $n \geq n_0$, the distribution function of the sum $S_n = n^{-1/\alpha}(\xi_1 + \dots + \xi_n)$ has limited density $p_n(x)$. If ξ_i has pseudomoment $\mu(m)$ and $\mu(0) = \dots = \mu(r-1) = 0$, where $r-1 \in [\alpha]$, and there exists an absolute pseudomoment $v(r)$, then

$$\sup_{x \in R_k} |p_n(x) - g(x)| = O\left(n^{-\frac{r-\alpha}{\alpha}}\right),$$

and if $\mu(0) = \dots = \mu(r)$ and there is a $(1+\alpha)$, then

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BANIS, Lit. mat. sb., 1973, 13, No 1, pp 17-22

$$\sup_{x \in R_k} |p_n(x) - g(x)| = o(n^{1/\alpha})$$

as $n \rightarrow \infty$.

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UDC: 519.2

BANIS, I. I.

"Estimating the Rate of Convergence in an Integral Limit Theorem"

Lit. mat. sb. (Lithuanian Mathematics Collection), 1972, 12, No 1, pp 41-46 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V36 [author's abstract])

Translation: Let the sequence $\xi_1, \xi_2, \dots, \xi_n, \dots$ of independent identically distributed random quantities satisfy the conditions: a) there exists an absolute pseudomoment $v(r)$; b) $\mu(0) = \dots = \mu(r-1) = 0$, $r = 1 + [\alpha]$, $\mu(r)$ is a pseudomoment and c) there exists an absolute pseudomoment $v(1+\alpha)$, d) $\mu(0) = \dots = \mu(r) = 0$. If conditions a) and b) are satisfied, then we have the estimates:

$$|F_n(x) - G(x)| \leq \frac{cv(r)}{n^{\frac{r-\alpha}{\alpha}}}, v(r) \geq 1,$$

$$|F_n(x) - G(x)| \leq \frac{1}{n^{\frac{r-\alpha}{\alpha}}} \frac{cv(r)^{\frac{1}{r+1}}}{r+1}, v(r) < 1,$$

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BANIS, I. I., Lit. mat. sb., 1972, 12, No 1, pp 41-46

and if conditions c) and d) are satisfied, we have the estimates:

$$|F_n(x) - G(x)| \leq \frac{cv(1+\alpha)}{n^{\frac{1}{\alpha}}}, \quad v(1+\alpha) > 1,$$

$$|F_n(x) - G(x)| \leq \frac{cv(1+\alpha)^{\frac{1}{2+\alpha}}}{n^{\frac{1}{\alpha}}}, \quad v(1+\alpha) < 1.$$

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BANIS, I. I.

"Estimate of Rate of Convergence in Multidimensional Integral Limit Theorem in the Case of Convergence on Stable Symmetrical Rule"

Lit. mat. sb. [Lithuanian Mathematics Collection], Vol 11, No 3, 1971, pp 497-509; (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V23 by the author).

Translation: The sequence $\xi_1, \xi_2, \dots, \xi_n, \dots$, of identically distributed, k -dimensional random vectors is studied. An estimate is produced on the rate of convergence when there are absolute pseudo moments of order $R = 1 + [\alpha]$, $0 < \alpha \leq 2$,

$$\left| F^{*n} \left(\frac{1}{n^\alpha} x \right) - G(x) \right| \leq \frac{c_1(k) [v(r)]^{\frac{1}{r+1}}}{n^\alpha},$$

if $v(r) < 1$, $0 < \alpha < 2$ and

$$\frac{1}{2} \left| F^{*n} \left(\frac{1}{n^\alpha} x \right) - G(x) \right| \leq \frac{c_1(k) v(r)}{n^\alpha}.$$

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BANIS, I. I., Lit. mat. sb., Vol 11, No 3, 1971, pp 497-509.

if $\nu(r) > 1$, $\frac{1}{2} < \alpha \leq 2$, $F_{\alpha n} \left(\frac{1}{n^{\alpha}} x \right)$ is the distribution function of the

sum S_n , $S_n = n^{\frac{1}{\alpha}} (\xi_1 + \dots + \xi_n)$, $G(x)$ is the distribution function of the limiting symmetrical stable rule with exponent α ($0 < \alpha \leq 2$).

USSR

BANIS, I. I., KALINAYUSKAYTE, N. B., BAYTKUS, P. S.

"The Rate of Convergence and Stable Distribution in a Local Theorem"

Lit. mat. sb. [Lithuanian Mathematics Collection], Vol 11, No 3, 1971, pp 511-516, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V24 by the author's).

Translation: Let $\{\xi_i\}$, $i = 1, 2, \dots$, be a sequence of independent, identically distributed random quantities, belonging to the area of normal attraction of stable rule G_α , and such that the normalized sum with all $n > n_0$ has limited density. Under conditions such that random quantities $\{\xi_i\}$ have zero pseudo moments $\mu(k)$ of order $k = 0, 1, \dots, r - 1$, where $r = [\alpha] + 1$, and absolute pseudo moment $v(r)$ is finite, a residual term is produced in the local theorem of order $O\left(n^{-\frac{r-\alpha}{\alpha}}\right)$ where $n \rightarrow \infty$. If we assume $\mu(k) = 0$, $k = 0, 1, \dots, r$, and $v(1 + \alpha) < \infty$, the residual term will be of the order $O\left(n^{-\frac{1}{\alpha}}\right)$ where $n \rightarrow \infty$.

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USSR

UDC: 519.214

~~BANIS, I. I.~~

"On an Integral Limit Theorem for Convergence to a Stable Law in the Multidimensional Case"

Lit. mat. sb. (Lithuanian Mathematics Collection), 1970, 10, No 4, pp 665-672 (from RZh-Kibernetika, No 7, Jul. 71, Abstract No 7V43)

Translation: The author considers a sum of n independent k -dimensional random vectors having identical distribution. An estimate from above is found for deviation of the distribution $P_n(B)$ of this sum from the distribution $G(B)$ of a symmetric stable distribution with exponent of $\alpha < 2$. This estimate is uniform with respect to all convex Borel sets B of

given volume, and has order $n^{-\frac{1+|\alpha|-2}{\alpha}}$. V. Petrov.

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USSR

UDC: 519.2

BANIS, R.

"On Weak Convergence of Stepped Random Processes"

Lit. mat. sb. (Lithuanian Mathematics Collection), 1972, 12, No 1, pp 47-53 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V64 [author's abstract])

Translation: Let the finite-dimensional distributions of the sums

$$X_n(t) = \sum_{r=1}^{k_n} X_{nr}(t),$$

where $X_{nr}(t)$ are independent infinitely small stepped random processes, converge to the corresponding distributions of the Poisson process $X(t)$. For the convergence of the distributions of functionals of $X_n(t)$ which are continuous in Skorokhodov topology in the space of functions without discontinuities of the second kind, it is sufficient that for all $\epsilon > 0$ and $T > 0$

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BANIS, R., Lit. mat. sb., 1972, 12, No 1, pp 47-53

$$\lim_{c \rightarrow 0} \limsup_{n \rightarrow \infty} \int_0^T [\Lambda_n(t+c) - \Lambda_n(t-c)] d\Lambda_n(t) = 0,$$

where $\Lambda_n(t) = EX_n(t)$ when $t \geq 0$, and $\Lambda_n(t) = 0$ when $t < 0$. The convergence of finite-dimensional distributions of a sequence of thinning-out processes involves the convergence of distributions of functionals of these processes.

USSR

BANIS, R. T.

"The Convergence of Sums of A Random Number of Multidimensional Exponential Random Processes to Generalized Poisson Processes"

Lit. mat. sb. [Lithuanian Mathematics Collections], Vol 11, No 3, 1971, pp 517-527, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V111 by the author).

Translation: This work extends the results of B. Frayer to the multidimensional case. Necessary and sufficient conditions are found for convergence of sums of independent, infinitely small, multidimensional, exponential random processes to Poisson processes in the case when the number of components in each sum is random, and sufficient conditions for convergence of these sums to generalized Poisson processes when the number of components in each sum, with a certain normilization, has the limiting distribution. The case is also studied when the component processes are Markov restoration processes.

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USSR

UDC 621.315.592

BANIS, T. YA., PARSHELYUKAS, I. V., POZHELA, YU. K.

"Absolute Negative Resistance of Gallium Arsenide under the Effect of a Strong Superhigh-Frequency Field on It"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 5, No 10, October 1971, pp 1990-1992

Abstract: A study was made of low-ohmic electron gallium arsenide in strong superhigh-frequency fields. Under the effect of the strong electric field of a wave guide, a filamentary test piece of gallium arsenide has a negative external resistance. Both the static u/i and the differential du/di resistances have a negative sign in this case. An explanation is offered for this phenomenon, and experimental curves are presented showing the constant current component of electronic gallium arsenide ($\rho = 0.4 \text{ ohm-cm}$) as a function of the constant external voltage under the effect of the variable field of a wave guide at a frequency of 9 gigahertz on the test piece. The negative differential resistance of gallium arsenide in the vicinity of the origin of the coordinates permits oscillation generation to be obtained by direct connection of an oscillatory circuit to the test piece. These oscillations were obtained experimentally with a parallel circuit on the order of 10 megahertz.

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USSR

UDC: 537.311.33

BANIS, T. YA., DARGIS, A. YU., and POZHELA, YU. K.

"Constant Electromotive Force Appearing During the Effect of Multiple Frequency Super-High Frequency Electric Fields on a Semiconductor"

Moscow, Radiotekhnika i Elektronika, Vol. 15, No 8, 1970, pp 1695-1700

Abstract: The authors study the harmo-electromotive force, constant emf, which appears in a homogeneous cavity-type semiconductor with symmetric, non-linear electrical conductivity where the semiconductor is located in a super-high frequency, not purely sinusoidal, electric field. The harmo-current, harmo-emf, and the harmonic component functions for the electric field are calculated to the sixth harmonic inclusively. Real computations were performed for n-Ge, n-Si, for an inertionless instance, and for instances of electrical conductivitytime lag manifestations. The calculated quantitative relationships and the interpretations of the phenomena were proven experimentally. Original article: six figures, five formulas, and seven bibliographic entries.

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1/2 023 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--DETERMINATION OF THE FORM OF A CURVILINEAR CRACK BY THE SMALL
PARAMETER METHOD -U-
AUTHOR--BANKCHUK, N.V. *B*
COUNTRY OF INFO--USSR
SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHAMIKA TVERDOGO TELA. MAR.-APR.
1970, P. 130-137
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--METAL CRACKING, CRACK PROPAGATION, BIBLIOGRAPHY, METAL
BRITTLENESS, BRITTLE FRACTURE, INTEGRODIFFERENTIAL EQUATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0352 STEP NO--UR/0484/70/000/000/0130/0137
CIRC ACCESSION NO--AP0124109
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--15NOV70

CIRC ACCESSION NO--AP0124109

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. APPLICATION OF THE SMALL PARAMETER METHOD TO AN ANALYSIS OF THE DEVELOPMENT OF WEAKLY CURVILINEAR CRACKS IN A FLAT BRITTLE BODY UNDER THE ACTION OF WEAKLY ASYMMETRICAL LOADS. AN INTEGRO DIFFERENTIAL EQUATION IS DERIVED TO DETERMINE THE GEOMETRY OF A CRACK IN THE FIRST APPROXIMATION. THIS SOLUTION IS GENERALIZED BY TRANSFORMING THIS EQUATION INTO AN ORDINARY DIFFERENTIAL EQUATION WHICH YIELDS THE SHAPE OF A CRACK IN QUADRATURE FORM.

UNCLASSIFIED

USSR

UDC: 621.391.822

BANKET, V. L., SERYKH, V. I.

"On the Probability Distribution of Noise at the Output of an FM Demodulator With Band Separation"

V sb. Vopr. elektrosvyazi (Problems of Electrical Communications--collection of works), Kiev, "Tekhnika", 1970, pp 87-90 (from RZh-Radiotekhnika, No 12 Dec 70, Abstract No 12A66)

Translation: The authors determine the probability density of noise at the output of a demodulator with band separation. This demodulator is used for optimum reception of a wide-band analog FM signal in the presence of high level additive jitter. It is assumed that a combination of the unmodulated carrier signal and normal noise is applied to the input of the demodulator with band separation. The analysis is done for the case of demodulator operation in the threshold region. It is shown that the probability density differs from normal in this case. A similar method may be used to find the probability density of noise at the output of a demodulator with band separation in the case of coherent reception. Two illustrations, bibliography of seven titles. N. S.

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USSR

UDC: 621.391.822

BANKET, V. L., SERYKH, V. I., SHCHERBAKOV, A. I.

"On the Probability Distribution of Noise at the Output of a Receiver of FM Signals"

V sb. Metody pomekhoustoychivogo priyema ChM i FM (Methods of Interference-Free FM and PM Reception--collection of works), Moscow, "Sov. radio", 1970, pp 71-79 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A67)

Translation: S. O. Rice's model for noise in FM receivers is used as the basis for finding the probability distribution of noise at the output of the low-frequency filter in a standard demodulator in the case of an unmodulated carrier. It is shown that in the case of operation in the threshold vicinity and below, the noise probability density differs appreciably from normal. The limits of applicability of the resultant expressions for probability density are determined. Resumé.

1/1

Pathology

USSR

UDC 616.9-022.38-039:616.3-008.1001.33

BANKHANEN, V. D., DENISOV, K. A., ARTEMOV, A. A., SITNIKOVA, G. M., SHAFTALA, V. A., and KHELINSKIY, V. P., Chair of Nutritional Hygiene and Epidemiology Donets Medical Institute imeni A. M. Gor'kiy, and Department of Nutritional Hygiene, Donets Municipal Sanitary Epidemiological Station

"Classification of Food Poisoning and Principles Underlying Its Compilation"

Moscow, Voprosy Pitaniya, No 6, Nov/Dec 71, pp 54-58

Abstract: Problems concerning classification of food poisoning and criteria to be considered are discussed, including the evolution of concepts of etiology, mechanisms of transmission, pathology and symptomatology, treatment and prevention, and data on international classification. A classification is proposed in which food poisonings are divided into four etiological categories: bacterial, nonbacterial, fungal, and of unclarified nature. According to the pathogenesis, the bacterial category is subdivided into two groups: toxininfections and bacterial toxicoses; while the nonbacterial category is subdivided into three groups specifying the pathogenic agents: additives, products inedible by man, and products which become temporarily or partly toxic

1/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--INVESTIGATION OF THE GETE,CU SUB2 TE SYSTEM -U-
AUTHOR-(04)-ABRIKOSOV, N.KH., BANKINA, V.F., LEV, YE.YA., SYSOYEVA, L.M.
COUNTRY OF INFO--USSR
SOURCE--IZV. SSSR. MOSCOW, NEORGANICHESKIYE MATERIALY, VOL 6, NO 5, MAY
70, PP 864-867
DATE PUBLISHED---MAY70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--GERMANIUM ALLOY, TELLURIUM ALLOY, COPPER ALLOY, TELLURIDE,
SOLID SOLUTION, SEMICONDUCTOR MATERIAL, INTERMETALLIC COMPOUND,
METALLURGIC RESEARCH FACILITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3005/1540 STEP NO--UR/0363/70/006/005/0864/0867
CIRC ACCESSION NO--AP0133464
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0133464

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ALLOYS OF THE GERMANIUM TELLURIUM COPPER TERNARY SYSTEM WERE STUDIED ALONG THE GE SUB0.97 TE, CU SUB2 TE PROFILE. THIS IS A QUASIBINARY PROFILE OF THE EUTECTIC TYPE WITH LIMITED REGIONS OF SOLID SOLUTIONS. THE AUTHORS ANALYZED THE MECHANISM OF THE FORMATION OF SOLID SOLUTIONS BASED ON GERMANIUM TELLURIDE AND SHOWED THAT WITH SOLUTION OF CU SUB2 TE, A PORTION OF COPPER ATOMS DISSOLVES IN THE VACANCIES, LOWERING THE CONCENTRATION OF THE POSITIVE CHARGE CARRIERS. ANOTHER PORTION REPLACES GERMANIUM, UTILIZING THEIR VALENCE ELECTRONS IN BONDING TO THE TELLURIUM ATOM INTRODUCED CONCURRENTLY. SUCH A MECHANISM OF FORMATION OF SOLID SOLUTIONS IS CHARACTERISTIC OF NONSTOICHIOMETRIC SEMICONDUCTIVE COMPOUNDS WITH VACANCIES. GERMANIUM TELLURIDE APPEARS TO BE ONE SUCH COMPOUND. FACILITY: INSTITUTE OF METALLURGY IMENI A. A. BAYKOV, ACADEMY OF SCIENCES USSR.

UNCLASSIFIED

USSR

UDC: 612.821.7

BAN'KOV, V. I., Chair of Anatomy and Physiology of the Sverdlov Pedagogical Institute

"Induction of Experimental Sleep in Cats by the Action of a Low-Frequency Modulated Electromagnetic Field"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Russian, No 9, 1972, signed to press 12 July 1971, pp 14-16

The action of a low-frequency modulated pulsed electromagnetic field at a frequency of 5-7 Hz, and up to 300 oersted intensity, produces a state of drowsiness or sleep in cats. Analysis of the electrocorticographic data, of the work of the heart, of respiration, and of the constant polarization potential of the animal brain indicates shifts in the organism similar to those observed during physiological sleep. (Byulleten' Eksperimental'noy Biologii, No 9, 14, 1972).

It has been shown that the central nervous system plays an active role in eliciting physiological reactions in an organism in response to the action of electromagnetic fields (EMF) [5, 6, 10, 11]. The cerebral cortex and the structures of the diencephalon, especially the hypothalamus, are most sensitive to a low-frequency electromagnetic field [10,11]. It is known that it is precisely these structures which exercise central control over physiological

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BAN'KOV, V. I., Byulleten' Eksperimental'noy Biologii i Meditsiny, No 9, 1972, signed to press 12 July 1971, pp 14-15

processes, particularly those of sleep and wakefulness [1, 2, 4, 7, 8, 12].

The purpose of our experiment was the induction of sleep in cats with the aid of weak rhythmic modulated pulses of an electromagnetic field.

Testing Method

To create the low-frequency modulated electromagnetic field we designed a radio set, consisting of an antenna, a solenoid, and their power source. The form, duration, and frequency of the pulses was determined by a universal pulse generator UEI-1.

A square-wave magnetic pulse with a constant high-frequency component of 5 gigacycles was produced at the output of the radiating system according to the principle of amplitude-pulse modulation. The modulation coefficient was 0.8. The modulating fluctuations varied in frequency from 0.5 to 100 Hz, and in pulse duration from 5 to 100 milliseconds. The duty factor varied with the change in frequency and duration of the magnetic pulse. The pulse intensity of the electromagnetic field was regulated to range from 10 to 1000 oersted.

Experiments (384) were performed on 10 cats. To evaluate the functional state of the animals subjected to the electromagnetic field, we recorded the electrocorticogram through implanted electrodes in the sensorimotor region of

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BAN'KOV, V. I., Byulleten' Eksperimental'noy Biologii i Meditsiny, No 9, 1972, signed to press 12 July 1971, pp 14-16

the cerebral cortex [3] (bipolar and unipolar lead) with the aid of a four-channel biopotential amplifier UBNK-V; the EKG was recorded by vector electrocardioscope VEKS-01 on a leep oscillograph N-102; the constant polarization potential of the cerebrum (PPP) was registered on automatic recorder N-372 with a constant current amplifier [9]; the respiratory frequency was registered on automatic recorder N-370 by amplifier UBNK-V.

Each test was carried out in the following order: All the physiological characteristics were recorded before switching on the electromagnetic field (this record also served as control). Then the physiological characteristics were recorded while the electromagnetic field was in effect (3 min.), and every 2-3 minutes for a period of 18-20 minutes a recording of the reaction was made. After each test we paused for an interval of up to one hour in order to avoid superimposing the effect of one electromagnetic field on another.

The first part of the experiment consisted of selection of power parameters for the electromagnetic field (intensity of electric and magnetic fields, duty factor of the magnetic pulse), of the optimal frequency and pulses duration for inducing sleep in the animals.

The second part of the experiment consisted of the effect on the animals of individually selected power parameters of the electromagnetic field, as well

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BAN'KOV, V. I., Byulleten' Eksperimental'noy Biologii i Meditsiny, No 9, 1972, signed to press 12 July 1971, pp 14-16

as for the frequency and pulse durations. The time during which the animals were in a state of sleep when the electromagnetic field was switched on ranged from one to two hours.

Results of the Tests

The analysis of the results obtained showed that low-frequency modulated pulsed electromagnetic fields, at an intensity of up to 300 oersted, at a pulse duration of 10 milliseconds, and a pulse repetition rate of 5-7 cycles per second, produced a state of drowsiness or sleep in the majority of the cats. A similar state in animals, caused by the action of electromagnetic waves, has been called radiosleep [4].

Beginning with the second minute of the electromagnetic field effect, and for the entire length of the operation, the peaks could always be seen on the electrocorticogram at a frequency of 14 cycles per second, or the synchronized activity characteristic for deeper sleep. In the cats, the appearance of the frequency peak on the electrocorticogram at 14 cycles per second was associated with development of sleep inhibition in the cerebral cortex [12]. In studying the constant polarization potential during radiosleep, a steady hyperpolarization was observed, reaching 12 millivolts (cf diagram). A similar electroencephalographic chart, accompanied by hyperpolarization of the

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BAN'KOV, V, I., Byulleten' Eksperimental'noy Biologii i Meditsiny, No, 9, 1972, signed to press 12 July 1971, pp 14-16

constant polarization potential, is typical for physiological sleep [7, 8]. The pulse frequency dropped from 120-150 to 80-90 per minute, while the respiratory frequency reached 11-12 per minute.



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BAN'KOV, V. I., Byulleten' Eksperimental'noy Biologii i Meditsiny, No 9, 1972, signed to press 12 July 1971, pp 14-16

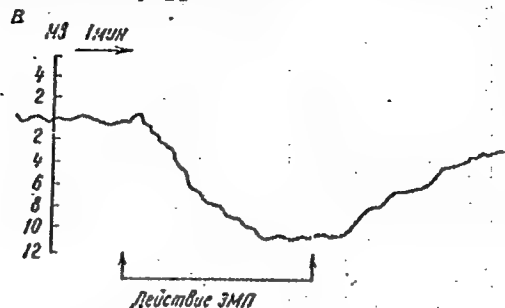


Chart. Influence of Modulated Pulsed Electromagnetic Field on Electrocorticogram (A and B) and Constant Polarization Potential (C). A-background; B-effect of electromagnetic field. Reading down on A: electrocorticogram, indication of effect, indication of time, 0.1 sec; on B: electrocorticogram, indication of effect, indication of time, 0.1 sec.

Key: (1) 50 microvolts (2) 1 second (3) B (4) C (5) millivolts
(6) 1 minute (7) effect of electromagnetic field

The given parameters of the electromagnetic field, which produce sleep in cats, are average values, for in a selection of pulse field parameters to induce sleep they may vary individually for each animal.

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USSR

BAN'KOV, V. I., Byulleten' Eksperimental'noy Biologii i Meditsiny, No. 9, 1972, signed to press 12 July 1971, pp 14-16

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• USSR

BAN'KOV, V. I., *Byulleten' Eksperimental'noy Biologii i Meditsiny*, No 9, 1972, signed to press 12 July 1971, pp 14-16

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8. Sorokhtin, G.N., Defitsit Vozbuzhdeniya i Razdrazheniya (Deficit of Excitation and Stimulation), Petrozavodsk, 1967, p 7.
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- 83 -

USSR

BAN'KOV, V. I., Byulleten' Eksperimental'noy Biologii i Meditsiny, No. 9, 1972, signed to press 12 July 1971, pp 14-16

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9/9

USSR

UDC: 621.396.69:621.372.412(338.8)

POZDNYAKOV, P. G., VASIN, I. G., BANKOV, V. N.

"A Quartz Torsional Resonator"

USSR Author's Certificate No 253162, Filed 17 Apr 68, Published 24 Feb 70 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V389 P)

Translation: This Author's Certificate introduces a quartz torsional resonator with a piezoelectric element made in the form of a rod of rectangular cross section with open slots. As a distinguishing feature of the patent, the resonator is designed so that the resonance frequency is lowered and the overall dimensions are reduced without impairing the temperature coefficient of frequency. The slots located on one half of the rod are arranged perpendicularly to the slots located on the other half, the number of slots on one half being equal to that on the other.

USSR

UDC: 547.944/945

BAN'KOVSKAYA, A. N., SHEYCHENKO, V. I., BAN'KOVSKIY, A. I., VECHKANOVA, L. D.,
KABANOV, V. S., All Union Scientific Research Institute of Medicinal Plants

"Ergovalide -- a New Alkaloid From Ergot Spurs"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 1, 1973, p 134

Abstract: Paper chromatography was used to isolate a new alkaloid from ergot spurs. The base has empirical formula $C_{21}H_{26}O_2N_4$, a melting point of 152.2-154°C (from methanol), $[\alpha]_D^{20}$ 80.8°C (c 0.47, chloroform), M 366 (mass-spectrometrically determined), and has been named "ergovalide". Chemical, UV, NMR and mass spectral analysis suggest that the base has the structure of N lysergylvalylamide.

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USSR

UDC 543.062:547.94:633.88

VECHKANOVA, L. D., BAN'KOVSKIY, A. I., BAN'KOVSKAYA, A. N., All-Union Scientific Research Institute of Medicinal Plants

"Method of Quantitative Analysis of Ergometrine in Ergot Spurs"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 4, 1972, pp 483-487

Abstract: Results are presented from studies connected with the development of a method of quantitative analysis of ergometrine in spurs of ergot of the ergometrine strain of VILR (All-Union Scientific Research Institute of Medicinal Plants) breeding which is the basic raw material for obtaining ergometrine. Primary consideration was given to studying the conditions of extracting the ergometrine from the raw material, its chromatography and removal from the sorbent. The method provides for fat extraction from the ground ergot spurs using petroleum ether as was described for ergotamine (A. N. Ban'kovskaya, et al., Med. prom. SSSR, No 4, 42, 1964). Diethyl ether in a 1:20 ratio was used to extract the total alkaloids from the raw material. The alkaloids were extracted with continuous mixing for 2 hours. Both paper and thin-layer chromatographic techniques are described.

1/1

USSR

UDC: 547.945.1

B
BAN'KOVSKAYA, A. N., VECHKANOVA, L. D., and BAN'KOVSKIY, A. I., All-Union Scientific Research Institute of Medicinal Plants, Bittsa, Ministry of Health USSR

"Composition of Alkaloids From Ergot of Ergometrinic Strain Spores"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 3, 1970, pp 381-382

Abstract: Ergot of ergometrinic strain spores is studied as to its alkaloid composition. Alkaloids were extracted from ground ergot with dichloroethane, from which they were exhaustively removed with a solution of tartaric acid. Bases were extracted from tartaric extracts with chloroform after alkalization with ammonia. Upon standing in the cold, white crystals with m. p. 159-160° were isolated (from methylethyketone and ethylacetate) of composition $C_{19}H_{23}O_2N_3$. The base dissolves readily in methanol, ethanol, acetone, moderately so in benzene and water; it forms a chlorohydrate with m. p. 175° (decomposes). From composition, melting point of the compound and its salts, test of mixing with reliable sample, and infrared spectrum it was identified as ergometrine.

1/1

1/2 008 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--COMPOSITION OF ALKALOIDS PRODUCED BY CLAVICEPS PURPUREA TUL -U-
AUTHOR--(03)-SHALAGINA, A.I., BANKOVSKAYA, A.N., OSTROVSKIY, N.I.
COUNTRY OF INFO--USSR
SOURCE--MIKROBIOLOGIYA, 1970, VOL 39, NR 1, PP 67-70
DATE PUBLISHED--70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ALKALOID, CHEMICAL COMPOSITION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PRUXY REEL/FRAE--1990/1412 STEP NO--UR/0220/70/039/001/0067/0070
CIRC ACCESSION NO--AP0109474
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0109474

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DATA ON ALKALOID COMPOSITION IN SCLEROTIUM AND MYCELIUM OF THE SAPROPHYTIC CULTURE ARE PRESENTED FOR 22 STRAINS OF CLAVICEPS PURPUREA TUL. UNDER EXPERIMENTAL CONDITIONS THE STRAINS WITH CERTAIN ALKALOIDS IN SCLEROTIA SOMETIMES DO NOT CONTAIN THEM IN MYCELIUM AFTER GROWTH ON A DEFINED MEDIUM. HENCE, SEVERAL STRAINS OF CLAVICEPS PURPUREA DO NOT EXHIBIT CORRELATION IN ALKALOID PRODUCTION IN PARASITIC AND SAPROPHYTIC CULTURES.

UNCLASSIFIED

Organophosphorous Compounds

USSR

UDC: 547.241'26'118

RAZUMOV, A. I., KRASIL'NIKOV, Ye. A., ZYKOVA, T. V., SINITSYNA, N. I.,
SALAKHUTDINOV, R. A., BAIKOVSKAYA, N. N.

"Research in the Series of Phosphinic and Phosphinous Acid Derivatives.
LXXXV. Electron Effects in Molecules of Certain Derivatives of Trivalent
Phosphorus in the Ground State"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1250-1253

Abstract: It is shown that gradual introduction of the thioalkyl electron-acceptor radical in compounds of the P_2PSR' , $RP(SR')_2$ and $P(SR)_3$ type leads to displacement of the resonance signal of the nucleus of the atom of tricoordinated phosphorus toward a weaker field, which is probably due to delocalization of an unshared electron pair in the phosphorus atom to the vacant d-orbitals of sulfur. It is found that nmr spectroscopy of the compounds studied can be used in discussing electron interactions between P^{III} and the aromatic nucleus in the ground state of the molecule.

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USSR

BANKOVSKAYA, N. N., ORLOVA, G. V.

"Chromatographic Activity and Dipole Moments of Certain Organothiophosphorus Compounds"

Tr. Kazan. Khim.-tekhinol. In-ta [Works of Kazan Institute of Chemical Technology], No 46, 1971, pp 57-59 (Translated from Referativnyy Zhurnal, Khimiya, No 2, 1972, Abstract No 2 B1410 from the Resume).

Translation: The dipole moments of a number of organothiophosphorus compounds are determined. The dependences established between their polarity and chromatographic activity.

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USSR

UDC: 547.944/945

BAN'KOVSKAYA, A. N., SHEYCHENKO, V. I., BAN'KOVSKIY, A. I., VECHKANOVA, L. D.,
KABANOV, V. S., All Union Scientific Research Institute of Medicinal Plants

"Ergovalide -- a New Alkaloid From Ergot Spurs"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 1, 1973, p 134

Abstract: Paper chromatography was used to isolate a new alkaloid from ergot spurs. The base has empirical formula $C_{21}H_{26}O_2N_4$, a melting point of 152.2-154°C (from methanol), d_4^{20} 80.8°C (c 0.47, chloroform), M 366 (mass-spectrometrically determined), and has been named "ergovalide". Chemical, UV, NMR and mass spectral analysis suggest that the base has the structure of N lysergylvalylamide.

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USSR

UDC 543.062:547.94:633.88

VECHKANOVA, L. D., BAN'KOVSKIY, A. I., BAN'KOVSKAYA, A. N., All-Union Scientific Research Institute of Medicinal Plants

"Method of Quantitative Analysis of Ergometrine in Ergot Spurs"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 4, 1972, pp 483-487

Abstract: Results are presented from studies connected with the development of a method of quantitative analysis of ergometrine in spurs of ergot of the ergometrine strain of VILR (All-Union Scientific Research Institute of Medicinal Plants) breeding which is the basic raw material for obtaining ergometrine. Primary consideration was given to studying the conditions of extracting the ergometrine from the raw material, its chromatography and removal from the sorbent. The method provides for fat extraction from the ground ergot spurs using petroleum ether as was described for ergotamine (A. N. Ban'kovskaya, et al., Med. prom. SSSR, No 4, 42, 1964). Diethyl ether in a 1:20 ratio was used to extract the total alkaloids from the raw material. The alkaloids were extracted with continuous mixing for 2 hours. Both paper and thin-layer chromatographic techniques are described.

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USSR

B
UDC: 547.945.1

BAN'KOVSKAYA, A. N., VECHKANOVA, L. D., and BAN'KOVSKIY, A. I., All-Union Scientific Research Institute of Medicinal Plants, Bittsa, Ministry of Health USSR

"Composition of Alkaloids From Ergot of Ergometrinic Strain Spores"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 3, 1970, pp 381-382

Abstract: Ergot of ergometrinic strain spores is studied as to its alkaloid composition. Alkaloids were extracted from ground ergot with dichloroethane, from which they were exhaustively removed with a solution of tartaric acid. Bases were extracted from tartaric extracts with chloroform after alkalization with ammonia. Upon standing in the cold, white crystals with m. p. 159-160° were isolated (from methylethyketone and ethylacetate) of composition $C_{19}H_{23}O_2N_2$. The base dissolves readily in methanol, ethanol, acetone, moderately so in benzene and water; it forms a chlorohydrate with m. p. 175° (decomposes). From composition; melting point of the compound and its salts, test of mixing with reliable sample, and infrared spectrum it was identified as ergometrine.

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- 5 -

1/2 042 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--EFFECT OF TWO PHOTON TRANSITIONS ON THE FREQUENCY AND THRESHOLD OF
TWO FREQUENCY GENERATION -U-
AUTHOR-(03)-APANASEVICH, P.A., BANKOVSKIY, A.S., KARAMALYEV, R.A.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL PRIKLAADNOI SPEKTROSKOPII, VOL. 12, MAR. 1970, P. 419-424
DATE PUBLISHED---MAR 70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--LASER RADIATION, LASER POWER OUTPUT, LINE BROADENING,
FREQUENCY CHARACTERISTIC, LINE SPLITTING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1989/1025 STEP NO--UR/0368/70/012/000/0419/0424
CIRC ACCESSION NO--AP0107539
UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0107539

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CALCULATION OF THE FREQUENCY AND THRESHOLD OF TWO FREQUENCY GENERATION IN MEDIA WITH HOMOGENEOUS AND INHOMOGENEOUS LINE BROADENING, ON THE BASIS OF THE EXACT SOLUTION TO THE PROBLEM OF THE EFFECT OF LASER RADIATION IN ONE CHANNEL ON THE AMPLIFICATION FACTOR IN ANOTHER. THE CONDITIONS UNDER WHICH GENERATION IN THE SECOND CHANNEL OCCURS AT THE CENTER FREQUENCY ARE DETERMINED. IN THE PRESENCE OF A FAIRLY HIGH POWER OUTPUT IN THE FIRST CHANNEL, GENERATION IN THE SECOND CHANNEL NEAR THE THRESHOLD MUST CONSIST OF TWO COMPONENTS, THE FREQUENCIES OF WHICH ARE DISPLACED FROM THE CENTER OF THE AMPLIFICATION LINE. IT IS SHOWN THAT SPLITTING OF THE AMPLIFICATION LINE UNDER THE ACTION OF THE RADIATION LEADS TO AN INCREASE IN THE THRESHOLD OF TWO FREQUENCY GENERATION IN COMPARISON WITH THE THRESHOLD CALCULATED WITHOUT TAKING TWO PHOTON TRANSITIONS INTO ACCOUNT. INHOMOGENEOUS LINE BROADENING CONSIDERABLY ATTENUATES THIS EFFECT.

UNCLASSIFIED

1/2 068

UNCLASSIFIED

PROCESSING DATE--13NOV70

TITLE--THEORY OF TWO-FREQUENCY LASERS -U-

AUTHOR--(02)-BANKOVSKIY, A.S., KARAMALIYEV, R.A. **B**

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12(2) 217-22

DATE PUBLISHED--70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER PUMPING, GAS LASER, QUANTUM MECHANICS, RADIATION EFFECT,
NONLINEAR EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1983/1798

STEP NO--UR/0368/70/012/002/0217/0222

CIRC ACCESSION NO--AP0054632

UNCLASSIFIED

2/2 068

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0054632

ABSTRACT/EXTRACT--(U) GP-0- A TRACT. A MATH. ANAL. IS GIVEN OF 2-FREQUENCY LASERS, BASED ON THE EXACT SOLN. OF THE PROBLEM OF THE EFFECT OF THE RADIATION UPON THE STATE AND PROPERTIES OF A QUANTUM SYSTEM (P. A. APANASEVICH, A. S. BANKOVSKII, 1967). TWO SCHEMES FOR 2-FREQUENCY LASERS ARE DESCRIBED, THE PUMPING PROCESS OF WHICH APPROACHED THAT OF GASEOUS LASERS. THE CALCN. SHOWS THAT A QUANTUM PROCESS LEADS TO A NON LINEAR DEPENDENCE OF THE LASER D. ON THE PUMPING D.

UNCLASSIFIED

ACC NR: AP9012178

13
SOURCE CODE: UR/0368/69/010/003/0462/0466

AUTHOR: Bankovskiy, A. S.; Anasevich, P. A.

ORG: none

TITLE: The effect of powerful fields on inhomogeneously broadened lines

SOURCE: Zhurnal prikladnoy spektroskopii, v. 10, no. 3, 1969, 462-466

TOPIC TAGS: spectral line,
monochromatic radiation

ABSTRACT: It has been shown earlier that the effect of powerful quasisresonance radiation on individual atoms and molecules may result not only in decreased polarization (the saturation effect) but in substantial changes in spectral characteristics; the latter can be treated as the radiation effect on Einstein's spectral indices. In systems with homogeneous broadening of spectral lines, the saturation effect merely leads to an overall decrease in absorption and the refractive indices of the medium and has no bearing on the spectral relationships. In systems consisting of particles with dissimilar natural frequencies (due to the Doppler effect in gases or to the difference between local fields in solids), the effect of powerful

1951 0466

ACC NR: AP9012178

radiation on the spectral characteristics of a medium as a whole may differ greatly from a similar effect on the spectral characteristics of an individual particle. This paper reports on a study of such differences as exemplified by a two-level system exposed to strong monochromatic irradiation. Orig. art. has: 2 figures and 16 formulas.

[WA-14] [VM]

SUB CODE: 20/ SUBM DATE: 19 Jul 68/ ORIG REF: 004/ OTH REF: 004

1951 0467

Card 2/2

USSR

UDC 537.533.2+537.534

BAN'KOVSKIY, N. G.

"Thermoelectron Emission of Tungsten in a Flow of Cesium Iodide Molecules"

Tr. Leningr. politekhn. in-ta (Works of Leningrad Polytechnical Institute),
1970, No 311, pp 10-16 (from RZh-Fizika, No 12(I), Dec 70, Abstract No
12Zh626)

Translation: The thermoelectron emission of W over a wide range of variation of the intensity of the flow of molecules (up to $4.2 \cdot 10^{17} \text{ cm}^{-2} \cdot \text{sec}^{-1}$) and emitter temperatures (from 1200 to 2100°K) was investigated. It is shown that its work function varies over a wide range and can take values both higher and lower than the work function of fewer W, depending on surface conditions. 27 references. Authors abstract.

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USSR

UDC: 621.385.64

LEVIN, G. Ya., BAN'KOVSKIY, S. P., and MIKHAYLOV, V. I.

"Magnetron Triode With Lens Optics in the Static Mode"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1653-1659

Abstract: In an earlier paper published as an Author's Certificate by the authors named above (No 286781, 1970), a proposal was made to provide the magnetron with lens optics through the use of additional electrodes, thus improving its efficiency in radar, telemetry, and communications. The present paper offers some of the results connected with the development of that device, contains a cutaway view of it, and indicates how it may be used in practice. The advantage of the tube is that, through its lens optics feature, control of the electron beam can be realized without power expenditure and without hindering the beam by metallic obstacles. The electric field is heterogeneous along the axis and has a complex pattern. Basic dimensions of two such magnetron types are given in a table, and curves for static operation of the tube are plotted.

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- (8) -

USSR

UDC: 621.385.64.001.5

LEVIN, G. Ya., BAN'KOVSKIY, S. P., and MIKHAYLOV, V. I.

"Generator Mode of the Magnetron Triode With Lens Optics"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1660-1662

Abstract: This article gives the results of investigations into the oscillatory mode of the magnetron triode with lens optics, description of which is given in a paper published in the same issue of the journal noted above (pp 1653-1659). A table in the present paper presents the dimensions of the interaction space of one such tube designed to operate on 1.5 kV and generate a wavelength of 1.4 cm. Curves are plotted for the generated power frequency, the frequency, the anode current, and the current in the control electrode, as functions of the control electrode voltage, and an explanation of the peculiarities in these curves is made. A detailed examination is conducted of how the generated oscillatory power varies with the control electrode voltage. Experiments conducted with the model here described showed that, in the shortwave end of the centimeter range, a modulation frequency differing from the carrier frequency by an order of two to three was possible. The authors thank A. Ya. Usikov for his advice.

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B
USSR

UDC 621.396.6-181.5

VALIYEV, K. A., BANKOVSKIY, Yu. V., RAKOV, A. V.

"Increasing the Output Probability of Usable Integrated Silicon Microcircuits"

Elektron. prom-st'. Nauchno-tekhn. sb. (The Electronics Industry. Scientific and Technical Collection), 1970, No 1, pp 52-60 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V182)

Translation: The authors analyze methods of studying defects in oxide plates at various stages in the manufacture of microcircuits -- defects which arise immediately after oxidation-diffusion processes, and defects which arise as a result of penetration of Al and B or P through defects. The dimensions and densities of the defects are determined. A formula is derived for evaluating the probability of failure of the microcircuit. Three illustrations, two tables, bibliography of thirteen titles.
H. S.

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Acc. Nr.: MP0100668

Ref. Code: UR 0381

USSR

UDC: 620.179.16

BORDYUGOV, G. T., LONCHAK, V. A., SHAPOVALOV, P. F., and BAKU,
D. S.

"Improving the Noise Immunity of the Mirror-Shadow Ultrasonic Control Method"

Sverdlovsk, Defektoskopiya, No. 1, 1970, pp 11-13

Abstract: The mirror-shadow ultrasonic control method operates on the principle that the transmitter and receiver of the ultrasonic signal are mounted to one side of the product, with the received signal taken from the surface at the opposite side. A defect is indicated by a reduction in the signal amplitude below some predetermined threshold level. The effect of noise is to reduce the signal amplitude even though there is no defect, and the result is the unjustified discard of a normal product. This article describes an improved defectoscope using the mirror-shadow method designed for better noise immunity through the use of coded radiation of the ultrasonic signal. A block diagram of the new system is given together with a short explanation of how it works.

Reel/Frame

19850137

EB 21

1/2 016 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--CONTRIBUTION OF IMPURITY STATES TO THE ELECTRICAL CONDUCTIVITY OF N
INDIUM ANTIMONIDE AT LOW TEMPERATURES -U-
AUTHOR-(03)-BANNAYA, V.F., GERSHENZON, YE.M., LITVAKGORSKAYA, L.B.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(1) 200-7
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--IMPURITY BAND, ELECTRIC CONDUCTION, CRYSTAL LATTICE
VIBRATION, INDIUM ANTIMONIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1983/1825 STEP NO--UR/0449/70/004/001/0200/0207
CIRC ACCESSION NO--AP0054659
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054659

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TEMP. DEPENDENCES OF ELEC. COND. AND HALL COEFF. OF MAX. REFINED AND SPECIALLY COMPENSATED N TYPE INSB SAMPLES WERE STUDIED IN WEAK MAGNETIC FIELDS AT 0.32-20DEGREESK. THE EXPTL. RESULTS CAN BE EXPLAINED WITH CONSIDERATION OF COND. IN THE CONDUCTION AND IMPURITY BANDS. ON THE BASIS OF THE 2 BAND CONDUCTION MODEL, THE TEMP. DEPENDENCE WAS DETD. OF THYRATIO OF ELECTRON CONCNS. IN THE 2 BANDS. THE TOTAL CONC. AND IONIZATION ENERGY OF IMPURITIES, E_{SUBD} , WERE CALCD., AND IT WAS FOUND THAT E_{SUBD} INCREASES WITH INCREASING COMPENSATION. THE CONTRIBUTION TO THE MOBILITY FROM CARRIER SCATTERING ON LATTICE VIBRATIONS WAS ESTD. AT 77DEGREESK.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--FACTORS AFFECTING THE QUALITY AND STABILITY OF DRY ENZYME
PREPARATIONS -U-
AUTHOR-(02)-LAGODA, I.V., BANNIKOVA, L.A. *B*
COUNTRY OF INFO--USSR
SOURCE--MOLOCH. PROM. 1970, 31(2), 11-15
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ENZYME ACTIVITY, BACILLUS, STREPTOCOCCUS, MOISTURE
MEASUREMENT, CHEMICAL STABILITY

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0086 STEP NO--UR/0333/70/031/002/0011/0015
CIRC ACCESSION NO--AP0120786
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0120786

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DRY ENZYME PREPNS. WERE MADE FROM CONCS. OF LACTOBACILLUS ACIDOPHILUS, STREPTOCOCCUS LACTIS, S. ACETONICUS, AND S. CREMORIS MIXED IN PROPORTION OF 1:20 WITH A PROTECTIVE MEDIUM CONSISTING OF A 10PERCENT AQ. SUCROSE SOLN., 5PERCENT GELATOSE, 2PERCENT NA GLUTAMATE, AND 5PERCENT NA CITRATE OR ACETATE. DRYING BY SUBLIMATION AT AN INITIAL TEMP. OF 23-5DEGREES AT 0.08-0.1 MM, FOLLOWED BY 32-5DEGREES FOR 1.5-2 HR WITH A TOTAL DURATION OF 10-12 HR GAVE A PREPN. OF 2.2-3.6PERCENT MOISTURE CONTENT, WITH A HIGH ACTIVITY (ACIDIFICATION OF MILK IN 6-11 HR) AND CONTG. 1-10 BILLION CELLS IN 0.1 G. WHEN STORED AT 4-6DEGREES ITS QUALITY WAS MAINTAINED 6 MONTHS, AT MINUS 18DEGREES 1 YEAR. FACILITY: VSES. NAUCH. ISSLED. INST. MOLOCH, PROM., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 614.1:312.2(470.1/.25)

BANNIKOVA, R. V., Docent, Chair of Social Hygiene and Organization of Public Health, Arkhangelsk Medical Institute

"Changes in the Mean Lifespan of the Population Under Conditions of the North"

Moscow, Zdravookhraneniye Rossiyskoy Federatsii, No 5, May 71, pp 15-19

Abstract: The mean lifespan has been regarded as one of the most important criteria of the health of a population. This value is a number arrived at from a complex set of many socioeconomic factors. The effect of the death rate from several illnesses on the mean lifespan of the population of Arkhangelsk and inhabitants of the arctic circle in the European USSR was studied for the period of 1939-1959. In 1958-1959, the mean lifespan of the Arkhangelsk population was 66.4 years (60 years for males, 70.8 years for females). In comparison to this, the mean lifespan in the Soviet Union as a whole was 69 years (64 years for males, 72 years for females). The study showed that over the 20 years studied (from 1939 to 1959), the mean lifespan in the Arkhangelsk region had increased by 24 years. In Arkhangelsk, it rose from 34.8 to 66.4 years. This sharp increase is attributed to a decrease in the death rate from certain diseases (pneumonia, tuberculosis, cardiovascular diseases, tumors) which are now better controlled. Comparative data from Dnepropetrovsk showed

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USSR

BANNIKOVA, R. V., Zdravookhraneniye Rossiyskoy Federatsii, No 5, May 71,
pp 15-19

that pneumonia, for instance, had nearly twice as high a death rate in Arkhangelsk than in the other city. Elimination of the death rate from cardiovascular diseases in Arkhangelsk would increase the mean lifespan by 8.6 years (more for females than for males). The effect of tumors on the mean lifespan was less dramatic: elimination of this cause would increase the mean lifespan by only 3 years. Tuberculosis is a more significant factor. Widespread immunization of the population against tuberculosis might ensure complete eradication of the disease. It was concluded from this study that the lifespan in the northern regions is determined by the same demographic values of specific diseases (as those determining the lifespan in more moderate regions) and not by the local climatic and geographical characteristics and socioethnographic factors prevailing in the North.

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USSR

UDC 911.3.614.1.312.6 (470.11)

BANNIKOVA, R. V.

"The Effect of Some Diseases on the Average Life Span in Conditions of the North"

V sb. Akklimatiz. i krayev. patol. cheloveka na Severe (Acclimatization and Regional Pathology of Man in the Far North--collection of works), Arkhangel'sk, 1970, pp 20-22 (from RZh-36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No 1.36.20 by A. Merkov)

Translation: The article provides morbidity tables and mean life span indexes for the city of Arkhangel'sk and natives of the Far North -- Nentsy and Komis in the Nenets National District. The effect of cardiovascular disease, malignant neoplasms and pneumonia in 1958-1959 on the longevity average was determined. Arkhangel'sk residents showed a decrease of average life span of 8.6 years due to cardiovascular illness, 3 years due to malignant neoplasm, and 1.4 years due to pneumonia. Corresponding figures for the Nenets National District were: 417, 1.5; and 6.7 years. Individual statistics for the Nenets area were: 3; 1.5; and .67; while the Komi statistics were: 4; 2.4; and 1.48 years.

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USSR

UDC: 621.372.853.3.092.22

ANISIMOV, Ye. V., BANNOVA, O. V., VORONIN, V. I.

"On Propagation of Electromagnetic Waves in an Inhomogeneous Plasma Waveguide"

V sb. Vopr. elektron. tekhniki (Problems of Electronic Technology--collection of works), Saratov, 1971, pp 53-59 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6B148)

Translation: A procedure is described for calculating a dispersion equation for a circular waveguide filled with an inhomogeneous plasma. Two illustrations, bibliography of three titles. Resumé.

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USSR

UDC 620.17:539.562:669.7

~~BAIKOV, O. A.~~, BUSALOV, YU. YE., KLEKOVKIN, A. A., KOP'YEV, I. M., and
PROKOF'YEV, D. I., Institute of Metallurgy imeni A. A. Baykov

"High-Strength Wires for Reinforcement of Light Alloys"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 7, 1973, pp 40-45

Abstract: A study was made of the mechanical properties, depending on tempering temperature and time, of high-strength wires from steels of industrial melts: U8A carbon steel (1), VMS9(2Kh15N5AM3) austenitic martensite steel (2), MS200(N18K9M5T) martensite-aging steel (3), EP322(OKh14N14M1) austenite steel (4), and an aging alloy based on Fe-Co-Ni-Cr (40KNKhMTYu) (5). X-ray structural analysis revealed that the loss of strength of the wire at increasing tempering temperature is generally determined by processes of recovery in cold-deformed martensite, the development of $\alpha(M) \rightarrow \gamma$ transformation, and also by coagulation of particles of excess phases. Wires of steel (1) weakened at temperatures $> 300^{\circ}\text{C}$, of steels (2), (3), and (4) - at temperatures $> 500^{\circ}\text{C}$, and of (5) - at temperatures $> 650^{\circ}\text{C}$. The selection of the technology for producing a light alloy-wire composite depends on the loss-of-strength temperature of the wire. A liquid-phase technology can be applied in strengthening with

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USSR

BANNYKH, O. A., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov,
No 7, 1973, pp 40-45

fibers of alloy (5). In strengthening wires of alloy steels (2), (3), and (4), only solid-phase methods with heating $\leq 500^{\circ}\text{C}$ can be applied, and only short-duration heating $< 300^{\circ}\text{C}$ can be applied for composites strengthened by steel (1) wires. Three figures, two tables.

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USSR

UDC 669.018.8

BANNYKH, O. A., GRIGOR'YEV, A. I., and OSIPOV, M. M., Academy of Sciences USSR, Institute of Metallurgy imeni A. A. Baykov
 "Influence of Alloying With Aluminum on Oxidation Resistance of Kh20N40 Alloy"

Moscow, Zashchita Metalloy, Vol 7, No 2, Mar-Apr, 1971, pp 161-164.

Abstract: The authors studied long-term oxidation of Kh20N40 alloy containing aluminum under thermal cycling conditions with heating to 900 and 1,000°. Chemical compositions of the alloys studied were:

Alloy No.	Al	Ni	Cr	C	Mn	Si	Fe
1	0.04	39.65	20.37	0.100	0.37	0.52	Remainder
2	0.85	40.24	19.80	0.095	0.40	0.23	"
3	2.04	40.65	19.48	0.048	0.35	0.14	"
4	4.62	40.67	19.50	0.040	0.38	0.18	"

Aluminum increases the rate of oxidation of this steel at 900°, but has a favorable influence on oxidation resistance at 1,000°.

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USSR

UDC 669.018.8

BANNYKH, O. A., GRIGOR'YEV, A. I., and OSIPOV, M. M., Academy of Sciences USSR, Institute of Metallurgy imeni A. A. Baykov
 "Influence of Alloying With Aluminum on Oxidation Resistance of Kh20N40 Alloy"

Moscow, Zashchita Metallov, Vol 7, No 2, Mar-Apr, 1971, pp 161-164.

Abstract: The authors studied long-term oxidation of Kh20N40 alloy containing aluminum under thermal cycling conditions with heating to 900 and 1,000°. Chemical compositions of the alloys studied were:

Alloy No.	Al	Ni	Cr	C	Mn	Si	Fe
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3	2.04	40.65	19.48	0.048	0.35	0.14	"
4	4.62	40.67	19.50	0.040	0.38	0.18	"

Aluminum increases the rate of oxidation of this steel at 900°, but has a favorable influence on oxidation resistance at 1,000°.

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USSR

UDC 620.193.5

OSIPOV, M. M., GRIGOR'YEV, A. I., and BANNIKH, O. A., Academy of Sciences USSR, Institute of Metallurgy imeni A. A. Baykov

"Effect of Chromium and Nickel on Heat Resistance of Fe-Cr-Ni Alloys in Air"

Moscow, Zashchita Metallov, Vol 7, No 1, Jan-Feb 71, pp 24-27

Abstract: The authors studied the effect of the chromium and nickel content on the heat resistance of Fe-Cr-Ni alloys and the oxide film structure for purposes of determining the optimal component ratio in austenitic steels for prolonged operation at temperatures up to 1000°. The alloys contained 16-24 wt. percent Cr and 30-45 wt. percent Ni. The specimens were oxidized in air at 850, 900, and 1000°. The tests for each temperature lasted 25, 50, and 100 hours, with a total oxidation time of 1000 hours for each specimen. The results indicate that the presence of ferric and nickel oxides in the scale structure is unfavorable. The greatest oxidation resistance is found where the scale

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USSR

OSIPOV, M. M., et al., Zashchita Metallov, Vol 7, No 1, Jan-Feb 71,
pp 24-27

forming on the alloys consists of the spinel $\text{Ni(Fe,Cr)}_2\text{O}_4$ and the oxide Cr_2O_3 . In order to obtain an oxide film structure favorable from the standpoint of prolonged heat resistance at 1000° , alloys containing 20 percent chromium should have at least 40 percent nickel, while alloys with 24 percent chromium should have 30 percent nickel.

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Conferences

USSR

UDC 669.01

ZUDIN, I. F., and BANNYKH, O. A.

"25th Conference on the Problem of High-Temperature Strength of Alloys"

Moscow, Izvestiya Akademii Nauk SSSR, -- Metally, No 5, 1970, pp 236-237

Abstract: This article contains brief reviews of papers given at the 25th Conference on the Problem of High-Temperature Strength of Alloys, held by the Scientific Council on Physical-Chemical Principles of Obtaining New Heat-Resistant Inorganic Materials of the USSR Academy of Sciences and the TsNIITMASH /Central Scientific Research Institute of Heavy Machinery/ in Moscow on 7-9 April 1970. Deputy Minister of Heavy, Power, and Transport Machine-Building of the USSR P. O. Siryy gave a report on "Requirements for Power Machine-Building Materials." In 3 days 35 reports were heard. A number of reports were devoted to the general laws of creep and rupture of alloys. In the report by Yu. N. Rabotnov there was a phenomenological description of the creep process, and the problems of mechanics in the field of creep and stress-rupture strength of metals were investigated. I. I. Trunin analyzed the time-temperature relation of stress-rupture strength of boiler and turbine materials. In the report en-

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USSR

ZUDIN, I. F., and BANNYKH, O. A., Izvestiya Akademii Nauk SSSR,-- Metally, No 5, 1970, pp 236-237

titled "Generalized Parametric Method of Determining Stress-Rupture Strength of Materials With High-Temperature Strength," V. K. Adamovich and A. V. Stanyukovich used a computer to process experimental data and demonstrated that in the case of nonmonotonicity of the variation of the high-temperature strength of steel and alloy under certain conditions it is possible to use short testing to estimate the stress-rupture strength.

A great deal of attention was given to the problem of composition materials. In a report entitled "Study of High-Temperature Strength of Reinforced Metal Systems Using Model Material," V. S. Ivanova and Z. G. Fridman presented data on the strength and structural characteristics of strain and rupture of the Cu-W composition material. It is demonstrated that reinforcing copper with networks of high-strength tungsten wire is more efficient than reinforcing with unidirectional wiring. In the paper by K. I. Portnoy and A. T. Tumanov, the possibility of increasing the temperature interval of high-temperature strength of nickel alloys to 1,200-1,300°C by reinforcing the matrix of ZhS6K nickel alloy with tungsten wire is demonstrated. The report by S. A. Golovanenko and S. B. Maslenkova, et al., is devoted to a study of the mechanical properties of a

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USSR

ZUDIN, I. F., and BANNYKH, O. A., *Izvestiya Akademii Nauk SSSR,-- Metally*, No 5, 1970, pp 236-237

composition material based on KhN70Yu reinforced with tungsten and molybdenum wire as a function of the volumetric proportion of wire at room temperature and higher.

The problems of diffusion and surface alloying were the topics of reports by Yu. P. Romashkin ("Activation Nature of Diffusion of Interstitial Atoms in the Transition Metals"), I. B. Borovskiy, I. D. Marchukova, and Yu. E. Ugaste (mutual diffusion in metal systems), and N. S. Gorbunov, Yu. P. Ponomarenko, et al. (vacuum diffusion chromizing).

The pseudodislocations in multiple phase and composition systems were discussed in a report by V. N. Rozhanskiy and G. S. Knizhnik, who concluded that in order to eliminate the process of accumulation of pseudodislocation sources of internal stresses in multiple phase systems or composition fiber materials, one of the phases must be sufficiently plastic. In the report entitled "Characteristic Features of the Effect of Rhenium on the Dislocation Structure and Mechanical properties of Molybdenum", S. N. Kaverin, G. G. Kurdyumov, et al., noted that alloying molybdenum with rhenium leads to a decrease in the covalent component of the interatomic bond, significantly changes the stress relaxation conditions on the concentrators, complicating the propa-

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USSR

ZUDIN, I. F., and BANNYKH, O. A., Izvestiya Akademii Nauk SSSR, -- Metally, No 5, 1970, pp 236-237

gation of cracks, and lowers the temperature of transition to the brittle state. L. I. Ivanov, E. A. Abramyan, and Ye. Ye. Kazilin investigated creep of single crystals of tungsten at 1,400-2,200°C. They established that the process controlling the creep rate under these conditions is climb of the edge dislocations to adjacent glide planes.

In the report by Yu. N. Surkov, F. N. Bersceneva, et al., a study is made of the effect of the dislocation structure on the high-temperature strength of alloys (E1437B, EP481) after high-temperature thermomechanical treatment.

There were reports elucidating the role of the interphase surfaces in alloys as the factor causing hardening at high and moderate temperatures and intense creep at high temperatures, the effect of the structural stability on high-temperature strength of alloys, the effect of carbon on the phase composition and properties of multicomponent alloys on a nickel base alloyed with niobium, the temperature of beginning of intergrain fracture as a function of solubility of the admixture and the eutectic melting point, evaluation of the possibility of using fine-grain structure of heat-resistant nickel alloys for short

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USSR

ZUDIN, I. F., and BANNYKH, O. A., Izvestiya Akademii Nauk SSSR,-- Metally, No 5, 1970, pp 236-237

service lives, algebraic description of temperature-dependent type of brittleness of heat-resistant alloys, the problems of structural strength of parts of power plants, the effect of a number of alloying elements on the phase composition, structure, and physical-chemical properties of alloys, and the effect of silicon on the impact toughness, creep, and high-temperature strength of chromium-manganese austenitic steel. It was established that silicon accelerates the process of carbide formation, decreases the solubility of carbon in austenite, and promotes piling up of carbide particles along the grain boundaries. Other reports dealt with the achievement of high-temperature strength and structural stability of ferrite steel by using an Fe_2W hardening phase, the positive effect of heat treatment on hardening of niobium alloys with high-temperature strength, the advantage of new methods (diffusion welding and explosion welding) of combining metals in solid states, and the optimal sizes of hardening particles of vanadium carbide ($\sim 300\text{\AA}$) in order to obtain high strength and ductility of age-hardenable austenitic steel.

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USSR

UDC 669.15'26'74-194:620.186

KARTASHOVA, L. I., BANNYKH, O. A., and ZURIN, L. F., Institute of Metallurgy imeni A. A. Baykov

"Structure and Properties of Kh12G14 Steels With Nickel and Aluminum"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No. 2, 1971, pp 37-40

Abstract: This work presents a study of the influence of combined alloying with nickel and aluminum on the structure and mechanical properties of type-Kh12G14 low-carbon Cr-Mn steel. Four groups of alloys were studied, each characterized by a constant nickel content (0, 1.5, 3.0, and 4.7%) and 0.5-3.0% aluminum, plus 0.048-0.068% C; 12-13.8% Cr; 12.6-14% Mn; 0.5-0.62% Si; 0.012-0.017% S; 0.01-0.018% P; 0.01% Ce; 0.005% B. The solubility of aluminum in the austenite increases with decreasing hardening temperature from 1250 to 1100°C and depends on the nickel content. Increasing the nickel content to 4.7% increases the limiting concentration of aluminum by more than two times. The compositions studied showed high plasticity and ductility. These properties were retained after holding at 630°C for 1000 hours. Work hardening decreases with increasing nickel content and aluminum content. The yield point of the steels depends on δ -ferrite content, varying between 21 and 40 kg/mm².

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1/2 027 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--STRUCTURE OF OXIDE FILMS AND SCALE RESISTANCE OF AUSTENITIC
CHROMIUM MANGANESE STEEL 45KH15G14YUS -U-
AUTHOR--(04)-PROKOFYEV, D.I., BANNYKH, O.A., ZUDIN, I.F., MIROSHKINA, H.I.
COUNTRY OF INFO--USSR
SOURCE--IZVEST. AKAD. NAUK SSSR, METALLY, MAR.-APR. 1970, (2), 235-241
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--SPINAL, METAL OXIDE, CHROMIUM MANGANESE STEEL, AUSTENITIC
STEEL, SURFACE PROPERTY, CHEMICAL STABILITY, CHROMIUM STEEL, OXIDE
FILM/(U)45KH15G14YUS AUSTENITIC STEEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3003/1452 STEP NO--UR/0370/70/000/002/0235/0241
CIRC ACCESSION NO--AP0130385
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0130385

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SCALE RESISTANCE OF A NUMBER OF MELTS OF AUSTENITIC CR-MN STEEL WAS STUDIED IN RELATION TO THE STRUCTURE OF THE OXIDE FILM. IN ALL CASES GOOD SCALE RESISTANCE WAS RETAINED UP TO 900DEGREESC. THE SCALE FORMED AT 900DEGREESC COMPRISED A NUMBER OF LAYERS INCORPORATING FE SUB2 O SUB3 AND MN SUB2 O SUB3, SPINELS OF COMPLEX STRUCTURE, CR SUB2 O SUB3, AND THIN LAYERS OF OXIDES CONTG. A HIGH PROPORTION OF SI. THE RATE OF OXIDATION GRADUALLY SLOWED AFTER 1500 H AT 900DEGREESC; THIS WAS ATTRIBUTED TO THE CR SUB2 O SUB3.

UNCLASSIFIED

USSR

UDC 669.15'74'24-194.3

BANNYKH, O. A., KOVNERISTYY, Yu. K., and PEDAN, T. N., Moscow

"Phase Transformations and Mechanical Properties of High-Alloy Cr-Mn-Ni Steels"

Moscow, Akademiya Nauk SSSR. Izvestiya. Metally, No 6, Nov-Dec 72, pp. 123-129

Abstract: The basic phase transformations taking place under the effect of temperature and plastic flow in high-alloy Cr-Mn-Ni steels are considered and which also determine three important qualities inherent in these steels: the possibility of considerable work hardening while retaining the nonmagnetic state, high temperature-time stability of the austenitic structure, and superplasticity. Manifestation of these qualities depends on the development of various phase transformations and, consequently, is determined by the chemical composition of the steel.

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1/2 007 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--AMIDES AND HYDRAZIDES OF OXALIC ACID. XVII. CONDENSATION OF
ARENESULFAMIDES WITH ARYLAMINOETHYLOXAMIC ACID ESTERS -U-
AUTHOR--(C3)-PETYUNIN, P.A., CHERNYKH, V.P., BANNYY, I.P.
COUNTRY OF INFO--USSR
SOURCE--ZH. ORG. KHIM. 1970, 6(5), 1015-19.
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--CONDENSATION REACTION, OXALIC ACID, AZIDE, ESTER, AMIDE,
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CONTROL MARKING--NO RESTRICTIONS
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ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE REACTION OF (CG SUB2 ET) SUB2 WITH RC SUB6 H SUB4 NHCH SUB2 CH SUB2 NH SUB2 GAVE RC SUB6 H SUB4 NH(CH SUB2) SUB2 NHCOCO SUB2 ET (I). (R IS H, 4 ME, OR 3 ME). THE REACTION OF I WITH R PRIME1 COCL (R PRIME1 IS PH, ME, OR CH SUB2 CL) GAVE RC SUB6 H SUB4 N(COR PRIME1)(CH SUB2) SUB2NEGATIVE NHCOCO SUB2 ET (II). TREATMENT OF II WITH MECNA AND R PRIME2 C SUB6 H SUB4 SO SUB2 NH SUB2 GAVE RC SUB6 H SUB4 N(COR PRIME1) (CH SUB2) SUB2 NHCOCONHSO SUB2NEGATIVE C SUB6 H SUB4 R PRIME2 (III) R PRIME2 IS H, 4 ME, R CL, OR 4 NH SUB2). III WAS ALSO PREPD. BY TREATING I WITH R PRIME2 C SUB6 H SUB4 SO SUB2 NHNA TO OBTAIN RC SUB6 H SUB4 NH SUB2 NEGATIVE (CH SUB2) SUB2 NHCOCONHSO SUB2 C SUB6 H SUB4 R PRIME2, WHICH WAS THEN TREATED WITH R PRIME1 COCL. FACILITY: KHARKOV. FARM. INST., KHARKOV, USSR.

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BANSEVICHYUS, R. YU.

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mechanical engineering

THE EXCITATION OF PERIODIC AND RANDOM TORSIONAL OSCILLATIONS IN
ROTATING SYSTEMS

R. Yu. Bansevichyus and A. M. Rykalskis (Kaunas) Sci Repa Technol Translation
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The device used for application of loading torque of any sign and form to a rotating system consists of a geared rotor and stator with a multiphase winding, fed by pulses of predetermined duty factor by a special commutator controlled by a photoelectric sensor which locates the angular position of the rotating system. The load of any type is formed of sectors of the static characteristics of the stator-rotor system during rotation of the rotor of the excited system. This allows torsional oscillations of the rotating system to be excited in a frequency range beginning at 0 Hz, the frequency and amplitude of the exciting oscillations being independent of the angular speed of rotation of the excited system and controlled by changing frequency and amplitude of the supply voltage applied to the commutator.

Random oscillations with fixed spectral density are excited by attachment of a commutator through the amplifier to a random function generator. /113

The upper boundary of the frequency range is determined, depending on the structural parameters of the device and the angular rotating speed of the excited system. The dependence of the maximum value of applied torque on the moment of inertia of the attached system is determined. The results of experimental studies are presented.

1/2 015 UNCLASSIFIED PROCESSING DATE--090CT70
TITLE--THE PRODUCTION OF ALL WELDED SCREEN PANELS (FROM THE EXPERIENCE OF
THE BELGOROD BOILER PLANT -U-
AUTHOR-(03)-BANSCHNIK, V.G., BELAVIN, V.A., KLEPACH, A.P.
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT THE BELGOROD BOILER PLANT, A SERIES OF STANDARDIZED COAL DUST BOILER UNITS, DESIGNED FOR OPERATION WITH SUPERCHARGING AT A PRESSURE OF 300 MM OF WATER COLUMN, HAS BEEN DESIGNED. USED IN SUCH A BOILER UNIT IS A STRUCTURE FOR PROTECTING THE HEATING SURFACES IN THE COMBUSTION CHAMBER, WHICH CONSISTS OF ALL WELDED GAS IMPERMEABLE SCREENING WALLS FORMED BY A WELDED MEMBRANE PANEL MADE UP ON STANDARD ELEMENTS. THE CONSIDERATIONS INVOLVED IN DESIGNING AND PRODUCING THIS UNIT ARE SET FORTH IN THE ARTICLE. AT PRESENT THE STATE SPECIAL DESIGN OFFICE "ENERGOMASH" IS DESIGNING A MECHANIZED FLOW LINE FOR THE PRODUCTION OF GAS IMPERMEABLE SCREEN PANELS FOR THE BELGOROD BOILER PLANT.

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BANSHCHIKOV, V., Meditsinskaya Gazeta, 30 Jun 72, p 3

Recognition of the role of heredity in the onset of some mental diseases does not at all signify a fatal approach, but, conversely, provides a correct therapeutic and preventive guideline. We must develop genetic investigations of mental diseases at rapid rates and study the patterns of hereditary transmission. Epidemiological investigations of the spread of all kinds of mental disturbances in various population groups should accompany such studies. The results of these investigations will become the foundation for preventive medical and genetic measures which as yet cannot be skillfully implemented owing to insufficient scientific data. However, medical and genetic consultations with individuals who are getting married and are ready to have children are fully feasible today.

Consultations with cytogeneticists, a chromosome analysis, and genetic and biochemical tests are especially important for the prevention of serious congenital anomalies of mental development, i.e., Down's syndrome, phenylketonuria, etc. For example, it was established that in a significant percentage of cases Down's disease, whose frequency has increased recently, is connected with chromosome disorders of the mother. Preliminary cytogenetic consultations, which determine the degree of probability of the birth of a sick child, can sharply reduce this disease rate.

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In patients suffering from phenylketonuria, which is one of the most serious forms of oligophrenia, early diagnosis is of decisive importance. It is well known that an excess of phenylalanine, an amino acid caused by a disturbance in enzyme activity, hampers the development of a child's brain in the first years of life. Diet and the appropriate chemotherapy fully neutralize the harmful effect of this hereditary biochemical disturbance on a child's nervous system. When the critical period passes, the therapeutic and preventive measures can be stopped without risk. This example attests to the important role of skilled medical and genetic investigations in the control of hereditary psychoneurological diseases.

As we assume, the measures of controlling pathological heredity in general and psychopathological heredity in particular should become the subject of a joint discussion by the representatives of a number of medical and biological disciplines. The time is quite ripe for this.

Childhood and adolescence, when the decisive psychophysiological foundations of the future personality are laid down, are the most important field of neuropsychiatric prevention. The importance of various environmental factors in this process is as great as the role of heredity. Through interaction,
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both groups of factors create in childhood and adolescence the background which subsequently will determine in significant measure the psychological makeup of a personality. Such a background also contains the "germs" of future psychopathological deviations. Therefore, preventive and educational measures by psychiatrists with respect to this age group represent work with a long-range goal and far-reaching social consequence. Parents and educators must be taught psychologically correct methods of bringing up children. Dispensary services for patients with psychoneurological disturbances should be provided everywhere at an early age. Each such child should be under the observation of a skilled psychoneurologist and his parents should receive sensible practical recommendations. We must sharply increase the role of psychoneurologists and child psychologists. This can be done only with the maximum possible expansion of scientific research in this field and the training of appropriate personnel.

It is well known that a significant part of the most important mental diseases begins in adolescence. As a rule, mental deviations appear gradually, and physicians have to deal with advanced psychopathological states. Persistent explanatory work, drawing attention to the psyche, and imparting habits of emotional self-education are dictated by the demands of life.

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